

In the Claims:

Please cancel claims 1-20 and add new claims 21-36 as follows:

Claims 1-20 (Canceled)

21. (New) An isolation system for providing an isolated telephone line communication channel for digital data signals in a forward direction and in a reverse direction across an isolation barrier, the system comprising:

a plurality of isolation elements which form the isolation barrier, at least two of the isolation elements being isolation capacitors, the at least two isolation capacitors comprising at least a first isolation capacitor and a second isolation capacitor;

a powered system on a first side of the isolation barrier, the powered system coupled to the isolation barrier for driving a forward direction digital differential signal across at least the first isolation capacitor and the second isolation capacitor;

an isolated system on a second side of the isolation barrier, the isolated system coupled to the isolation barrier for driving a reverse direction digital differential signal across at least the first isolation capacitor and the second isolation capacitor; and

an analog to digital converter located on the second side of the isolation barrier, the analog to digital converter configured to allow offset calibration;

wherein the forward direction digital differential signal and the reverse direction digital differential signal are both driven through the same first and second isolation capacitors so that the first and second isolation capacitors bidirectionally transfer the forward direction and reverse direction digital differential signals;

wherein the isolated system receives at least some power transferred from the powered system from across the isolation barrier for providing a power supply on the second side of the isolation barrier; and

wherein the isolated system receives a clock signal from the powered system through at least one of the plurality of isolation elements.

22. (New) The isolation system of claim 21, wherein the isolated system receives a clock signal from the powered system through an isolation element that is separate from the first isolation capacitor and the second isolation capacitor.

23. (New) The isolation system of claim 21, wherein at least one of the forward direction digital differential signal and the reverse direction digital differential signal includes both data and control information.

24. (New) The isolation system of claim 21, wherein each of said plurality of isolation elements of said isolation barrier comprises a capacitor.

25. (New) The isolation system of claim 21, wherein a portion of said plurality of isolation elements of said isolation barrier each comprises a capacitor.

26. (New) An isolation system for providing an isolated telephone line communication channel for digital data signals in a forward direction and in a reverse direction across an isolation barrier, the system comprising:

a plurality of isolation elements which form the isolation barrier, at least two of the isolation elements being isolation capacitors, the at least two isolation capacitors comprising at least a first isolation capacitor and a second isolation capacitor;

a powered system on a first side of the isolation barrier, the powered system coupled to the isolation barrier for driving a forward direction digital differential signal across at least the first isolation capacitor and the second isolation capacitor;

an isolated system on a second side of the isolation barrier, the isolated system coupled to the isolation barrier for driving a reverse direction digital differential signal across at least the first isolation capacitor and the second isolation capacitor; and

an analog to digital converter located on the second side of the isolation barrier, the analog to digital converter configured to allow offset calibration;

wherein the forward direction digital differential signal and the reverse direction digital differential signal are both driven through the same first and second isolation capacitors so that the first and second isolation capacitors bidirectionally transfer the forward direction and reverse direction digital differential signals;

wherein the isolated system receives at least some power transferred from the powered system from across the isolation barrier for providing a power supply on the second side of the isolation barrier;

wherein the isolated system receives a clock signal from the powered system through at least one of the plurality of isolation elements that is separate from the first isolation capacitor and the second isolation capacitor; and

wherein at least one of the forward direction digital differential signal and the reverse direction digital differential signal includes both data and control information.

27. (New) The isolation system of claim 26, wherein each of said plurality of isolation elements of said isolation barrier comprises a capacitor.

28. (New) The isolation system of claim 26, wherein a portion of said plurality of isolation elements of said isolation barrier each comprises a capacitor.

29. (New) A method for providing digital communication across a telephone line isolation barrier, the telephone line isolation barrier comprising a plurality of isolation elements, the method comprising:

transmitting from a first side of the isolation barrier a first transmitted digital differential signal to be communicated across at least two of the isolation barrier elements, the at least two isolation barrier elements comprising at least a first isolation capacitor and a second isolation capacitor;

receiving on a second side of the isolation barrier a first received digital differential signal from at least two of the isolation barrier elements comprising the first isolation capacitor and the second isolation capacitor;

providing an analog to digital converter on the second side of the isolation barrier;

generating on the second side of the isolation barrier a clock signal, the clock signal generated from information transmitted across the isolation barrier;

generating on the second side of the isolation barrier a power supply, the power supply generated from information transmitted across the isolation barrier; and

calibrating the offset of the analog to digital converter;

wherein bidirectional communication exists through the first and second isolation capacitors.

30. (New) The method of claim 29, wherein the clock signal is generated on the second side of the isolation barrier from information transmitted across the isolation barrier through an isolation element that is separate from the first isolation capacitor and the second isolation capacitor.

31. (New) The method of claim 29, wherein at least one of the first transmitted digital differential signal and the first received digital differential signal includes both data and control information.

32. (New) The method of claim 29, wherein each of said plurality of isolation elements of said isolation barrier comprises a capacitor.

33. (New) The method of claim 29, wherein a portion of said plurality of isolation elements of said isolation barrier each comprises a capacitor.

34. (New) A method for providing digital communication across a telephone line isolation barrier, the telephone line isolation barrier comprising a plurality of isolation elements, the method comprising:

transmitting from a first side of the isolation barrier a first transmitted digital differential signal to be communicated across at least two of the isolation barrier elements, the at least two isolation barrier elements comprising at least a first isolation capacitor and a second isolation capacitor;

receiving on a second side of the isolation barrier a first received digital differential signal from at least two of the isolation barrier elements comprising the first isolation capacitor and the second isolation capacitor;

providing an analog to digital converter on the second side of the isolation barrier;

generating on the second side of the isolation barrier a clock signal, the clock signal generated from information transmitted across the isolation barrier through at

least one of the plurality of isolation elements that is separate from the first isolation capacitor and the second isolation capacitor;

generating on the second side of the isolation barrier a power supply, the power supply generated from information transmitted the isolation barrier; and

calibrating the offset of the analog to digital converter;

wherein at least one of the first transmitted digital differential signal and the first received digital differential signal includes both data and control information; and

wherein bidirectional communication exists through the first and second isolation capacitors.

35. (New) The method of claim 34, wherein each of said plurality of isolation elements of said isolation barrier comprises a capacitor.

36. (New) The method of claim 34, wherein a portion of said plurality of isolation elements of said isolation barrier each comprises a capacitor.